A Demonstration Project to Promote the Exchange of Public Health Information between Pathology Laboratories and NPCR Cancer Registries

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Overview

- Background
  - Cancer surveillance
  - Pathology labs
- Changes in the environment
- Key Partners
- Reporting Pathology Protocols (RPP) activities
- Challenges and Opportunities

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Public Health Importance

- Estimated cancer burden in 2005
  - Second leading cause of death: 570,000
  - Estimated new cancers: 1,373,000
  - Direct medical costs $69.4 billion

- Cancer is a reportable disease
  - Data collected by state health departments and sent to the National Program of Cancer Registries (NPCR) at CDC

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Cancer Surveillance in the United States

- CDC's National Program of Cancer Registries (NPCR)
  - Contributes data for 45 states, DC and 3 territories
- NCI's Surveillance Epidemiology and End Results Program (SEER)
  - Contributes data for 5 states and 6 sub-state regions
- United States Cancer Statistics published annually

NPCR NATIONAL PROGRAM OF CANCER REGISTRIES

SURVEILLANCE EPIDEMIOLOGY AND END RESULTS

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Cancer Data

- Traditionally diagnosed and reported from hospitals
- Reporting from hospitals has worked well
  - Codes defined by cancer community
  - Data reported electronically in a flat file format
  - Cancer registries read and process these files easily

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Importance of Pathology Data

- > 90% of cancers diagnosed in pathology laboratories
- Pathology reports key for exact identification of cancer
- Potential for rapid reporting for special studies

- However…
  - Path reports traditionally in a narrative format
    - Dictated as the pathologist examines the specimen
  - Challenges to use in a computer environment

Changes in the Environment

- Cancer care moves from hospitals to out-patient settings
- Standardization of pathology reporting
- The American College of Surgeons
  - Accredits hospital cancer programs
  - Starting January 2004
    - Require that 90% of pathology reports use the new standards
- Public Health Information Network (PHIN)

Reporting Pathology Protocols (RPP)

- Purpose of RPP
  - Take advantage of the changes in the environment
  - Encourage a standard exchange of data between two key public health partners
    - Pathology labs
    - NPCR cancer registries
  - Promote and evaluate national industry standards
  - Evaluate and compare to existing data

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Reporting Pathology Protocols (RPP)

- In 2001, NPCR funded
  - California and Ohio for RPP1
  - Cancers of the colon and rectum
- In 2004, NPCR funded
  - California, Maine, and Pennsylvania for RPP2
  - Cancers of the breast, prostate, and melanoma of the skin
- RPP2 needed to
  - Develop processes and standards to implement nationwide

What does PHIN mean for this Project

- Messaging standard
  - Health Level 7 (HL7)
- Standard vocabulary for the question
  - Logical Observations and Identifiers Names and Codes (LOINC)
  - What is the primary site of the cancer
- Standard vocabulary for the answer
  - Systematic Nomenclature of Medicine, Clinical Terms (SNOMED CT)
  - The primary site is the right ascending colon

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Key Partners

- College of American Pathologists (CAP)
  - SNOMED International
- Pathologists and pathology labs
- Pathology laboratory software vendors
- Cancer registries and software vendors
- Experts in PHIN vocabulary and messaging standards

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College of American Pathologists (CAP)

- Principal organization of board-certified pathologists
- In 1999, the CAP Cancer Committee published checklists to be completed on paper to:
  - Aid pathologists with completeness, accuracy, and uniformity in reporting of malignant tumors
  - Supplement traditional reporting
- SNOMED International encoded the checklists with SNOMED CT codes

Traditional Pathology Report

- **Colon, right, segmental resection to include appendix and ileum**
- **Micro: Mod diff colonic adenoca (2 cm)**
- **Mucinous adenocarcinoma invading through the bowel wall extending through muscular propria into overlying serosal surface of the bowel. 0/12 LNs involved. Margins are free of tumor. Benign appendix. All of twenty-two lymph nodes are free of tumor.**
- **TNM stage pT3 pNO pMX**

Colon and Rectum Cancer Checklist

COLON AND RECTUM: Resection

Patient name:

Surgical pathology number:

MACROSCOPIC

Tumor Site

___ Cecum

_X_ Right (ascending) colon

___ Hepatic flexure

___ Transverse colon

___ Splenic flexure

___ Left (descending) colon

___ Sigmoid colon

___ Rectum

___ Not specified

Colon and Rectum Cancer Checklist

Histologic Type

___ Adenocarcinoma
X Mucinous adenocarcinoma (greater than 50% mucinous)
___ Medullary carcinoma
___ Signet-ring cell carcinoma (greater than 50% signet-ring cells)
___ Small cell carcinoma
___ Undifferentiated carcinoma
___ Other (specify): _____
___ Carcinoma, type cannot be determined

Histologic Grade

___ Not applicable
___ Cannot be determined
_X_ Low-grade (well to moderately differentiated)
___ High-grade (poorly differentiated to undifferentiated)

SNOMED CT Encoded CAP Checklist

TUMOR SITE ***[R-0025A, 371480007] Tumor site (observable entity)***

- **___ Cecum** ***[T-59100, 32713005] Cecum structure (body structure)***
- **_X_ Right (ascending) colon** ***[T-59400, 51342009] Right colon structure (body structure)***
- **___ Hepatic flexure** ***[T-59438, 48338005] Structure of right colic flexure (body structure)***
- **___ Transverse colon** ***[T-59440, 485005] Transverse colon structure (body structure)***
- **___ Splenic flexure** ***[T-59442, 72592005] Structure of left colic flexure (body structure)***
- **___ Left (descending) colon** ***[T-59450, 55572008] Left colon structure (body structure)***
- **___ Sigmoid colon** ***[T-59470, 60184004] Sigmoid colon structure (body structure)***
- **___ Rectum** ***[T-59600, 34402009] Rectum structure (body structure)***
- **___ Not specified** ***[T-59000, 14742008] Large intestinal structure (body structure)***

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Pathologists and Pathology Labs

- RPP1
  - University of California at Irvine
  - University Hospitals of Cleveland
- RPP2
  - City of Hope Hospital, California
  - Maine Medical Center and Dahl Chase Labs
  - University of Pittsburg Medical Center
- Key issues
  - Integrate data entry into the normal work flow
  - Bring value added to the pathology lab

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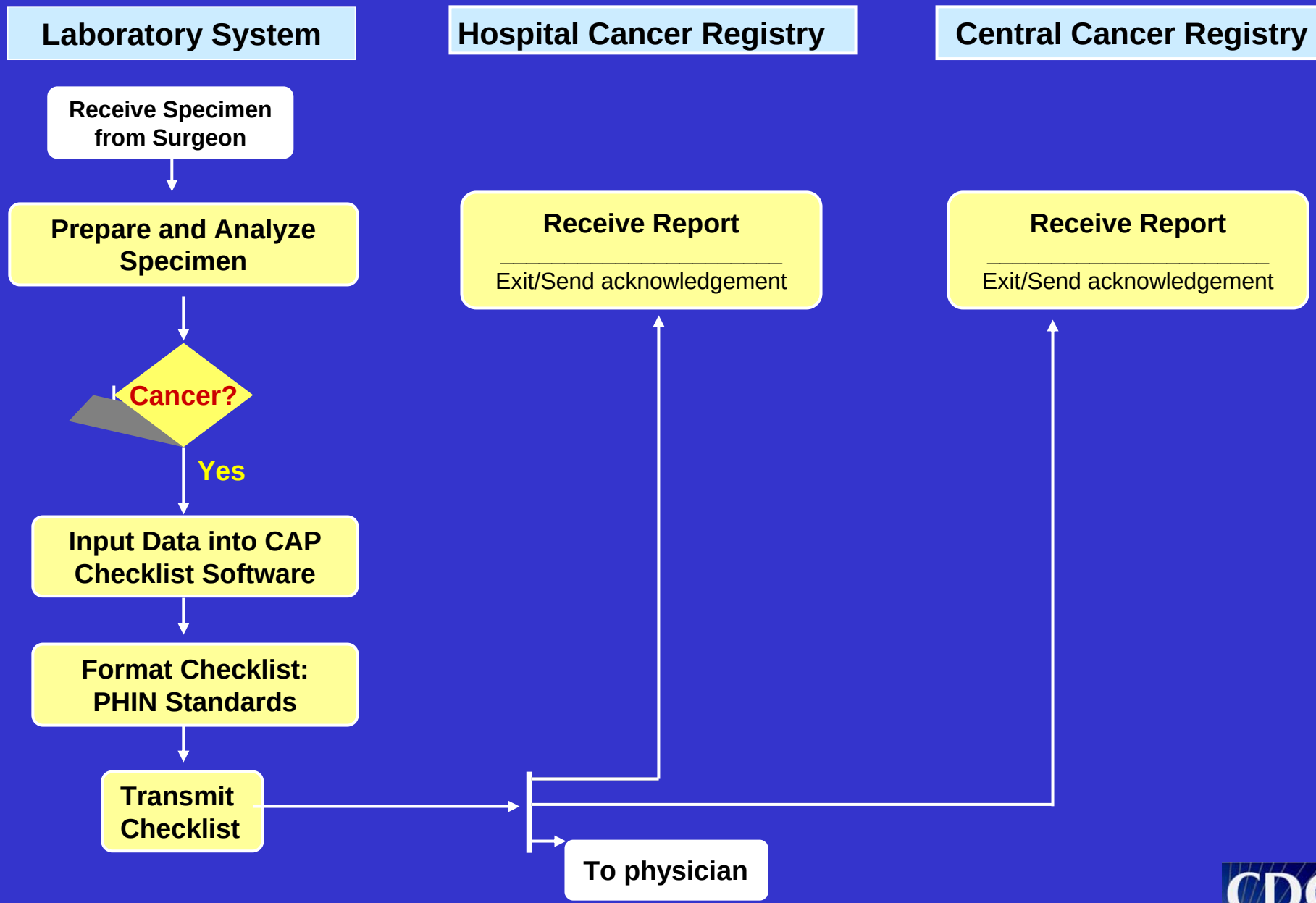
RPP Project Workflow



Pathology Lab Software Vendors

- RPP1
  - California – C/NET solutions
  - Ohio - Cerner
- RPP2
  - California – Cerner
  - Maine – Tamtron
  - Pennsylvania – Cerner
- Key issues
  - Participation at an affordable price
  - Acceptance of the vocabulary and messaging standards

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Cancer Registry Software Vendors

- RPP1
  - California – C/NET Solutions
  - Ohio – Rocky Mountain Software
- RPP2
  - California – C/Net Solutions
  - Maine – MRS
  - Pennsylvania – CRS+
- Key issues
  - Integrate new approach in a cost effective manner
  - Bring value added to the registry

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RPP Project - Process

- Key partners collaborate
  - Develop a guide for the collection and transmittal of data
  - Identify concepts without a LOINC code
  - Revise the checklists with CAP
  - Identify appropriate HL7 segments
  - Develop evaluation measures

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Implementation Tables with SNOMED and LOINC codes

RPP Item #	Proposed Item Name for Messaging	CAP Checklist Item Name	LOINC code	Data type*	SNOMED code
4	Tumor Site	Tumor Site	**33725-3**	CE	263601005
11	Histologic Type	Histologic Type	**31205-8**	CWE	371441004
13	Histologic Grade (hi/low)	Histologic Grade	33732-9	CWE	371469007

***CE – Coded Element**
CWE – Coded with exceptions

Table prepared by Barry Gordon

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Implementation Tables
RPP Fields to HL7 Segments

HL7 ID Number	HL7 Name	HL7 Req	RPP Req	Ohio Uses	Calif. Uses	contents, format, or example	Data Type
MSH:01	Field Separator	R	R	R	R	|	ST
MSH:02	Encoding Characters	R	R	R	R	"^~&"	ST
MSH:03	Sending Application	R	R	R	R	"CNETRPP" or "CoPathPlus"	HD
MSH:04	Sending Facility	R	R	R	R	Path Facility ID # (CLIA #) Name^Code^CLIA	HD
MSH:05	Receiving Application	O	O	Y	Y	e.g. "Cancer Registry Application"	HD
MSH:06	Receiving Facility	O	O	Y	Y	"UCI" or 'State Cancer Registry'	HD
MSH:07	Date/Time of Message	R	R	R	R	YYYYMMDDHHMMSS	TS

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Evaluation

- Are the data from RPP more:
  - Complete
  - Timely
  - Of higher Quality
- Do we have a process that works well for the major partners
  - Pathologists
  - Cancer registries
- Is this method of data collection and transmission ready for a wider audience

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Evaluation from RPP1

- Completeness of data
  - The narrative reports contain detailed information unavailable in the checklist
- Timeliness of data receipt is good
- Quality of data is good
- Additional work needs to be done to improve the process in the pathology labs
- All parties felt it worthwhile to pursue a second demonstration project

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Challenges

- CAP Checklists designed for paper reporting
- CAP Checklists cover only 90% of all cancers
  - What about *in situ* cases
  - What about sites without a checklist
- Cost to pathology laboratory

Summary

- Changes in the environment
  - Pathologists create a new method of data capture
  - Cancer care moving away from hospital
  - PHIN
    - Importance of common vocabulary and message
- Provide opportunity to CDC and NPCR
  - To evaluate a new method of reporting
    - Surveillance data available more quickly

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